Table 3-14

Noise Levels from Common Sources

Noise Source	Level (dBA)
Air Raid Siren at 50 Feet	120
On Platform by Passing Subway	100
On Sidewalk by Passing Heavy Truck or Bus	90
On Sidewalk by Typical Highway	80
On Sidewalk by Passing Autos with Mufflers	70
Typical Urban Area Background/Busy Office	60
Typical Suburban Area Background	50
Quiet Suburban Area at Night	40
Typical Rural Area at Night	30
Source: City of New York. Environmental Quality Review Technical Manual. December 1993.	

The Fairfax County Comprehensive Plan's noise policy minimizes the potential for noise and land use conflicts by using noise-compatible planning strategies. Fort Belvoir, while not subject to the Fairfax County noise policies or ordinances, has no activities that conflict with the local or federal standards and guidelines affecting human health and safety (US Army Garrison Fort Belvoir, 1999).

3.7 Infrastructure

The proposed increase in personnel and construction of new facilities to accommodate those new hires would generate additional demands for utilities such as potable water, wastewater collection and treatment, and electricity. The new constructions would generate stormwater runoff requiring treatment. Therefore, the existing infrastructure and availability of the relevant utilities is described for the site of the Proposed Action.

3.7.1 Water Supply

The Fairfax County Water Authority Water supplies water to Defense CEETA from two sources. The primary source is a 16-inch [in] (40-centimeters [cm]) line that ends at Defense CEETA at the intersection of Telegraph Road and Road B. The second source is Defense CEETA's

connection to a 30-in (76-cm) line that runs along Telegraph Road. The two sources are interconnected at an on-site cross connection. A 150,000-gallon (568,000-liter) underground tank provides water storage capacity for the complex. The on-site distribution system comprises over 12,000 ft (3.7 km) of pipes (US Army Garrison Fort Belvoir, December 2000).

Water supply service at the proposed T Block is available from a 10-in (25-cm) line that loops around the Main Building.

3.7.2 Wastewater

On-site sewage is discharged to an off-site Fairfax County Sanitary District 18-in (45-cm) sanitary sewer located at Defense CEETA's eastern property line and in which Defense CEETA has purchased a 540,000-gallon (2 million-liter) per day capacity. The on-site sewage collection system consists of over 9,000 ft (2.7 km) of 12-in (30-cm), 10-in (25-cm), 8-in (20-cm), and 6-in (15-cm) pipes. It is a gravity-driven system (US Army Garrison Fort Belvoir, December 2000).

3.7.3 Electricity

Dominion Virginia Power provides 34.5-kilovolt (kV) electrical power to Defense CEETA from three primary substations: Hayfield, Fort Belvoir, and Franconia. Defense CEETA has two on-site substations, Beulah and Williams Woods, which distribute power at 4.16 kV through an underground distribution system. Each substation delivers power from two 20 MVA transformers and provide the site with a firm power capacity of 40 MVA. The current load is about 15 MVA, allowing capacity for increased loads in the future (US Army Garrison Fort Belvoir, December 2000).

3.7.4 Heating/Cooling

The Defense CEETA complex has three chiller plants: UTB, Block K, and Williams Woods. The site's total heating capacity is over 60 million BTU per hour, and the cooling capacity over 9,000 tons (US Army Garrison Fort Belvoir, December 2000).

3.7.5 Solid Waste

Defense CEETA has a program to recycle metals, cardboard, glass, and aluminum. For solid waste that cannot be recycled, Defense CEETA has a contract with Waste Management, Inc. for removal and disposal in a licensed landfill (Army Garrison Fort Belvoir, December 2000). The exception is that construction and demolition debris is presently, and will continue to be, hauled

to the Hilltop Landfill in Fairfax County. Fort Belvoir generates about 10,460 tons of solid waste per year that is disposed of and 3,135 tons of waste that is recycled (Werner, February 24, 2000).

3.7.6 Stormwater

The developed portion of the Defense CEETA is mostly at the higher elevations of the property. Stormwater drains away from built-up areas through a combination of storm drains, culverts, curbs and gutters, and open channels. Defense CEETA has two main drainage basins that in turn drain into North Creek and South Creek respectively. A detention basin on each of these creeks controls the flow of stormwater from the Defense CEETA site (Army Garrison Fort Belvoir, December 2000).

Section 402 of the Clean Water Act of 1977 established requirements for discharges of stormwater associated with industrial activity under the National Pollutant Discharge Elimination System (NPDES) permit program. Within the Commonwealth of Virginia, VDEQ administers the stormwater-permitting program under the Virginia Pollutant Discharge Elimination System (VPDES) permit program. The VPDES permit program governs any construction activity including clearing, grading, and excavation activities, except for operations that result in disturbance of less than five ac (two ha) of total land area that is not part of a larger common plan of development or sale. Fort Belvoir has a general VPDES stormwater permit for installation activities.

Commonwealth of Virginia stormwater codes require management of both quantity and quality (best management practices). Fort Belvoir also complies with the Fairfax County building codes to the extent practicable, and building construction projects in Fairfax County must comply with stormwater as well as erosion and sedimentation control regulations.

3.8 Cultural Resources

Federal agency actions must comply with the National Historic Preservation Act (NHPA) of 1966, as amended. The intent of the NHPA is to integrate consideration of historic preservation issues into the early stages of project planning by a federal agency. Accordingly, under Section 106 of the NHPA, the head of any federal agency having direct or indirect jurisdiction over a proposed federal or federally financed undertaking is required – before the expenditure of any federal funds on that undertaking – to account for its effects on any district, site, building, structure, or object that is included or eligible for inclusion in the National Register of Historic Places.

Section 110, as amended, of the NHPA directs federal agencies to establish a program to locate, inventory, and nominate to the Secretary of the Interior all properties under their ownership or control that appear to qualify for inclusion in the National Register of Historic Places. To this

end, the cultural resources of Fort Belvoir have been surveyed utilizing the National Register Criteria for Evaluation (36 CFR 60.4). In February 2001, the installation completed the *Integrated Cultural Resources Management Plan (ICRMP) of US Army Garrison Fort Belvoir* (US Army Garrison Fort Belvoir, February 2001), which identifies the post's cultural resources and provides guidelines for the management of these resources.

There are no cultural resources within the proposed project area. No buildings or structures predating the construction of the existing Defense CEETA building and associated parking and roadways exist within the boundaries of the Defense CEETA complex. Soils in the immediate construction area have been disturbed by past constructionactivities, making the presence of archaeological resources with integrity extremely unlikely.

According to the post's GIS, the closest identified resource to the proposed project area within the boundaries of the Defense CEETA complex is a small archaeological site approximately 200 ft (60 m) southeast of the existing West Parking Lot, and separated from it by a steep grade change. The GIS shows this site as not eligible for listing on the National Register.

3.9 Natural Resources

3.9.1 Topography and Geology

Fairfax County lies within the Coastal Plain and Piedmont Physiographic Provinces. The fall line separating these provinces trends northeast to southeast, and is roughly parallel to Interstate 95 in the vicinity of Fort Belvoir. Fort Belvoir's Main Post lies within the Coastal Plain Physiographic Province.

The Coastal Plain Physiographic Province consists of unconsolidated sand, silt, and clay underlain by residual soil and weathered crystalline rocks. Most of the Coastal Plain Physiographic Province deposits in the Fort Belvoir area consist of a sequence of unconsolidated Cretaceous sediments that belong to the Potomac Group (Larson and Froelich, 1977, in: US Army Garrison Fort Belvoir, March 2001). These sediments consist largely of lenses of sand, silt, clay, and gravel and are characterized by abrupt changes in rock formation (US Army Garrison Fort Belvoir, May 1993). The Potomac Group represents an ancient river environment that is approximately 400 ft (122 m) thick beneath most of Fort Belvoir (US Army Garrison Fort Belvoir, May 1993).

The topography of Fort Belvoir consists of two nearly level plateaus that run south-southeast towards the Potomac River, and slope steeply to lowlands that are primarily associated with the floodplains of Accotink and Dogue Creeks (USGS 1989, Fort Belvoir). Steep slopes, ravines, and stream valleys surround the two plateaus on the east, south, and west sides. The installation ranges in elevation from approximately mean sea level (msl) along the Potomac River, to 240 ft (73 m) above msl at the intersection of Beulah and Woodlawn Roads. Uplands and plateaus

make up about 40 percent of the Main Post's land area, lowlands make up another 40 percent, and steep slopes make up 20 percent.

The topography of the Defense CEETA complex (Figure 3-4) overall is quite rugged, with several small minor plateaus draining to two steep-sided stream valleys. The existing structures at the complex have been constructed on these plateaus. Elevations range from 60 ft (18 m) to 240 ft (73 m) msl, and approximately two thirds of the site have slopes between seven and 25 percent. The remaining third is flat and has slopes within the two to seven percent range (Holmes and Narver, Inc., 1988, in: US Garrison Fort Belvoir, April 1993). The topography of the T Block site is relatively flat, approximately equal to the nearest buildings (the UTB Building and the East and West Annexes). The West Parking Lot, where the proposed parking structure would be constructed, slopes about 20 ft (6.1 m) from northwest to southeast. It is also about 20 ft (6.1 m) higher in elevation than the proposed T Block site.

3.9.2 Floodplains

Floodplains are significant as a physical feature of the landscape, as a master planning designation for conservation of certain resource values and flood insurance planning, and as a regulatory designation for Executive Order 11988 (Floodplain Management) and Chesapeake Bay Local Assistance Department (CBLAD) regulations.

From a planning perspective, Executive Order 11988 sets forth the responsibilities of federal agencies in reducing the risk of flood loss or damage to personal property, minimizing the impact of flood loss, and restoring the natural and beneficial functions of floodplains. Flood insurance maps, approximately depicting the 100-year floodways and 100- and 500- year floodplains, have been prepared by the Federal Emergency Management Agency (FEMA) and are used to determine design requirements for new projects that would encroach on designated areas.

More site-specific delineations of the 100-year floodplain are also used to determine the boundaries of Resource Protection Areas and associated CBLAD requirements for specific projects. The CBLAD requirements were adopted by the Commonwealth of Virginia and, by agreement, the Department of Defense, to reduce water quality impacts of various actions on the Chesapeake Bay. These requirements are addressed in Subchapter 3.9.7.

According to FEMA maps, no 100-year floodplain occurs at the Defense CEETA complex or within the proposed T Block site or parking structure sites.

3.9.3 Soils

The USDA Natural Resources Conservation Service (NRCS – formerly the Soil Conservation Service, or SCS) identified and mapped Fort Belvoir's soils in 1982 (USDA SCS, unpublished).

Soils maps showing the distribution of the installation's 22 soils series are available from the Fort Belvoir Directorate of Installation Support, as well as the installation's GIS.

The soils series range from well drained to very poorly drained, depending on their topographic position and texture. Textures range from coarse sandy loams to silt loams, but are mostly fine sandy loams and silt loams.

As shown in Figure 3-5 (Soils at Defense CEETA), soil types occurring at the proposed T Block construction site are almost entirely Urban Build-up (UB). Urban Build-up refers to soils that have already been altered by construction and landscaping. The West Parking Lot is located primarily on Belstville Silt Loam (37B), and to some extent on Dumfries Sandy Loam (61D). The Beltsville Silt Loam (D) soils are deep, moderately well-drained soils, with 0-7 percent slopes, while the Dumfries Sandy Loam is deep, well-drained, moderately permeable soils, with 15-25 percent slopes.

3.9.4 Groundwater

Fort Belvoir is located in the central and eastern portions of the Virginia Coastal Plain and is characterized by sedimentary features known as the Potomac Formation. Groundwater in the southeastern portion of Fairfax County is typically drawn from deep layers of coarse-grained strata located between thinner layers of fine-grained sand and gravel. Groundwater yields in the coastal plain can reach up to 100 gallons [gal] per minute (379 liters [l] per minute). Aquifer recharge areas can be vulnerable to contamination. Groundwater resources in the Coastal Plain Physiographic Province may be used as a water supply source, but Fort Belvoir withdraws groundwater for irrigation purposes only. The Fairfax County Water Authority supplies potable water for public use to Fort Belvoir (US Army Garrison Fort Belvoir, June 1999).

3.9.5 Surface Water

The Fort Belvoir Main Post is bounded by Dogue Creek to the east, the Potomac River and Gunston Cove to the south, and Pohick and Accotink Bays to the west. Surface waters on the Main Post include: Pohick, Dogue, and Accotink Creeks; a number of tributaries; groundwater seeps; and several man-made ponds, all of which drain into the lower Potomac River. Many of the smaller tributaries are intermittent over much of their length, having small watersheds confined to the installation.

The Defense CEETA site lies within the Dogue Creek watershed. Dogue Creek begins near the Rose Hill section of Alexandria, VA, and flows south across Telegraph Road through Fort Belvoir and the Woodlawn and Mt. Vernon subdivisions, finally emptying into the Potomac River. It lies completely within the coastal plain. The T Block site drains to South Creek, a

Topography

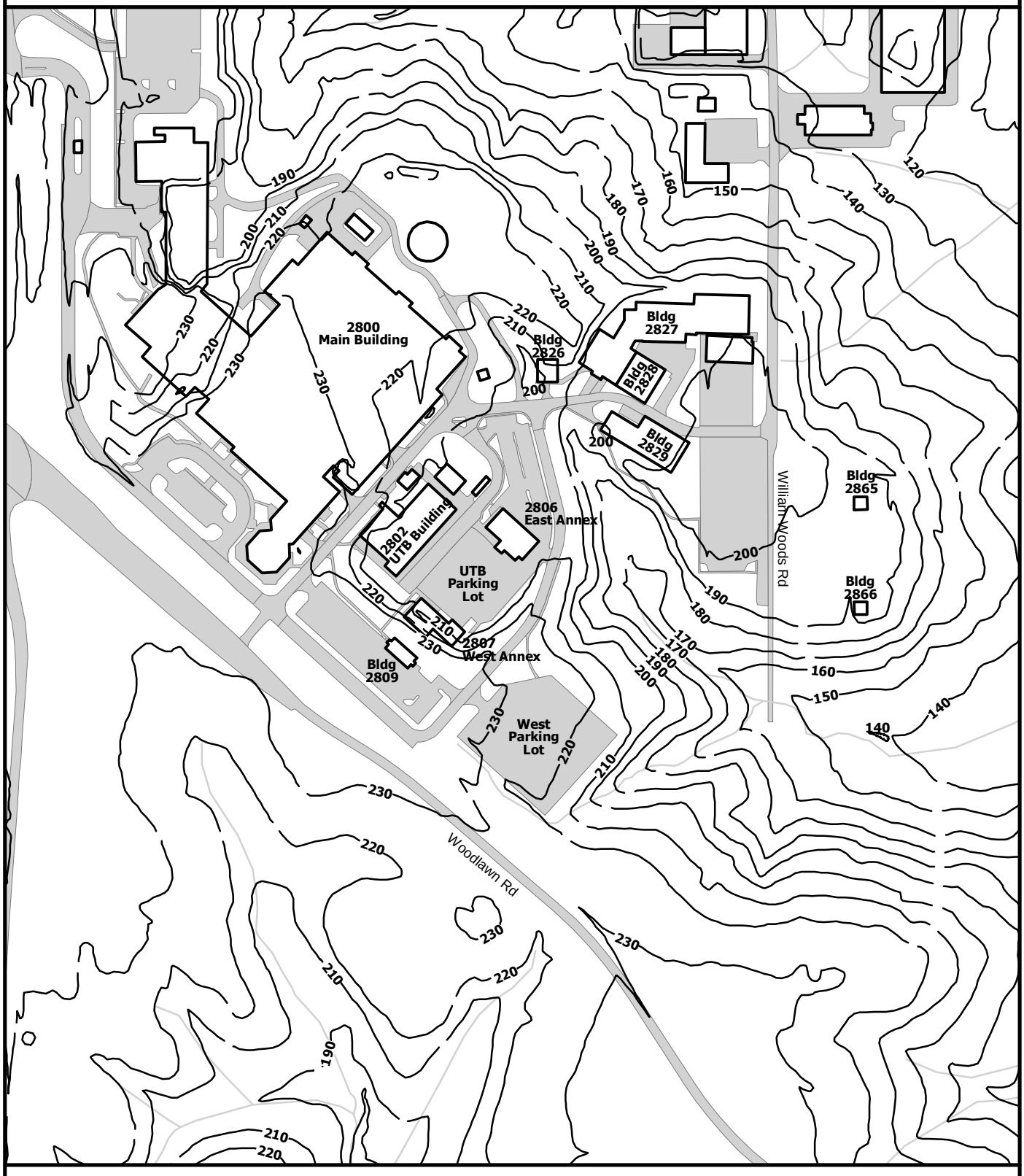

Figure 3-4

Soils at Defense CEETA

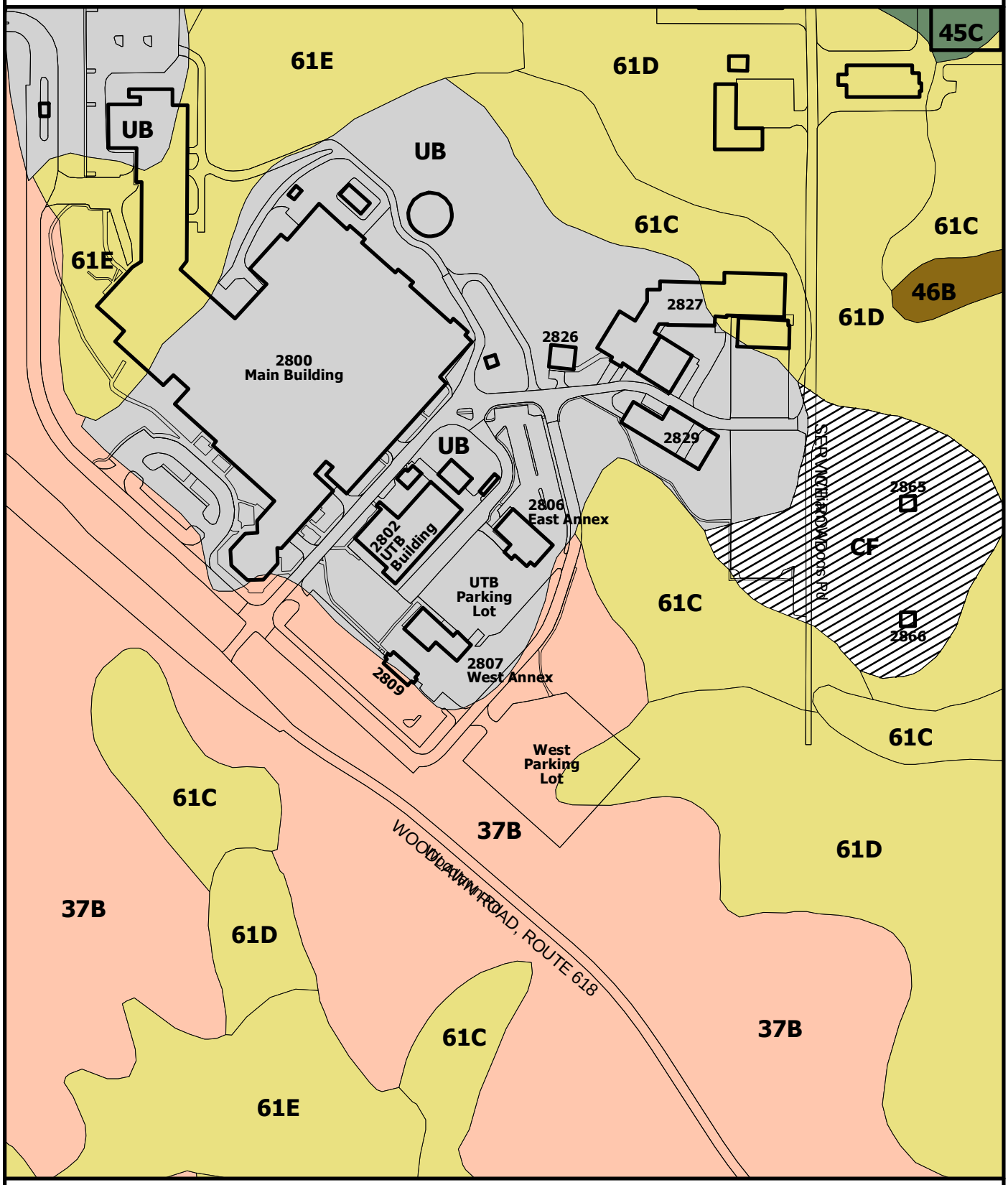

Figure 3-5

headwater tributary of Dogue Creek, through a detention basin. The West Parking Lot also drains to South Creek.

3.9.6 Vegetation

An installation-wide vegetation study of Fort Belvoir (Paciulli-Simmons, 1998) identified 16 community types, included in the broader categories of mixed hardwood forests, pine forests, floodplain hardwood forests, wetlands, old field grasslands, and urban land. The forest remnant is part of the Oak/Ericad (heath) community with some Virginia pine mixed in:

> "Upland forests on gravelly ridges and dry slopes, on tops of hills and bluffs, and along steep, well-drained slopes. Overstory—Chestnut Oak (*Quercus prinus*), Northern Red Oak (*Q. rubra*), White Oak, (*Q. alba*), and Scarlet Oak (*Q. coccinea*). Understory – Huckleberry (*Gaylussacia baccata*), Deerberry (*Vaccinium stamineum*), or Mountain Laurel (*Kalmia latifolia*)."

The proposed T Block addition and new parking lot site consist entirely of existing parking lots and other paved areas, and buildings (triple-wide trailers). The area most likely to be used for construction staging is an adjacent parking lot.

3.9.7 Wetlands and Chesapeake Bay Preservation Areas

3.9.7.1 Wetlands

Fort Belvoir completed baseline surveys of wetlands on the Main Post in 1997. The survey consisted of aerial photo interpretation combined with ground-truthing, following methods outlined in the *1987 Corps of Engineers Wetland Delineation Manual.* About 1,250 acres (506 hectares), or 11 percent, of the Main Post land area is wetland (Figure 3-6, Environmental Protection Areas). Wetland types include:

- Palustrine forested (Cowardin, 1979), which occurs in association with riparian areas of Accotink, Dogue, and Pohick Creeks. This was the predominant type of wetland found at Fort Belvoir.
- Freshwater tidal marsh wetland, which occurs along Accotink and Pohick Bays.
- Ephemeral wetlands, which are scattered throughout the forested portions of the installation.
- Seepage swamp wetlands, which are associated with slope areas.

- Beaver swamp wetlands, which also occur within installation riparian areas.

Approximately 25 percent of the undeveloped land at Defense CEETA is wetland. The predominant type is palustrine forested wetland, which occurs mostly within the Dogue Creek floodplain. The proposed construction sites do not encompass any wetland.

3.9.7.2 Chesapeake Bay Preservation Areas

Under the Federal Facilities Strategy and Federal Work Plan of 1998, and the 1990 Memorandum of Agreement (MOA) between the USEPA and DoD, Fort Belvoir has agreed in principle to cooperate with state and local government regulations of the Chesapeake Bay Preservation Act (CBPA) as part of the 1987 Chesapeake Bay Cooperation Agreement.

Under this cooperative agreement, Fort Belvoir's actions are consistent to the extent practicable with the Fairfax County Chesapeake Bay Preservation Ordinance (CBPO). The CBPO was enacted pursuant to the CBPA, Sections 10.1-2100, et seq., of the Code of Virginia. The Fairfax County CBPO divides the county into Resource Protection Areas (RPAs) and Resource Management Areas (RMAs) designed to protect water quality in the Chesapeake Bay and its tributaries (Figure 3-6). RPAs are buffers comprised of the 100-year floodplain or any area within 100 ft (30.5 m) of a perennial stream as shown on a USGS map. RPAs can include one or more of the following:

- Tidal wetlands
- Tidal shores
- Perennial streams
- Non-tidal wetlands connected or contiguous to tidal wetland or perennial streams.

All land outside of an RPA is classified as an RMA. According to Fairfax County RPA maps, there are no RPAs at the proposed T Block building site. The closest mapped RPA is associated with North Creek, a tributary to Dogue Creek, about 1,000 ft (305 m) northeast of the proposed T Block addition.

3.9.8 Wildlife

Fort Belvoir has set aside 2,524 acres (1,021 hectares) of land for wildlife, including the Accotink Bay Wildlife Refuge, the Jackson Miles Abbott Wetland Refuge, and a Forest and Wildlife Corridor, established in 1991. These and other undeveloped areas of Fort Belvoir, such as stream valleys and slopes, are home to numerous wildlife species. Based on information from installation-wide surveys that were conducted for the preparation of the Fort Belvoir *Integrated Natural Resources Management Plan* (INRMP) (Ernst and Miller, 1997; Ernst and Belfit, 1997 in: US Army Garrison Fort Belvoir, March 2001), the installation contains potential habitat for

Environmental Protection Areas

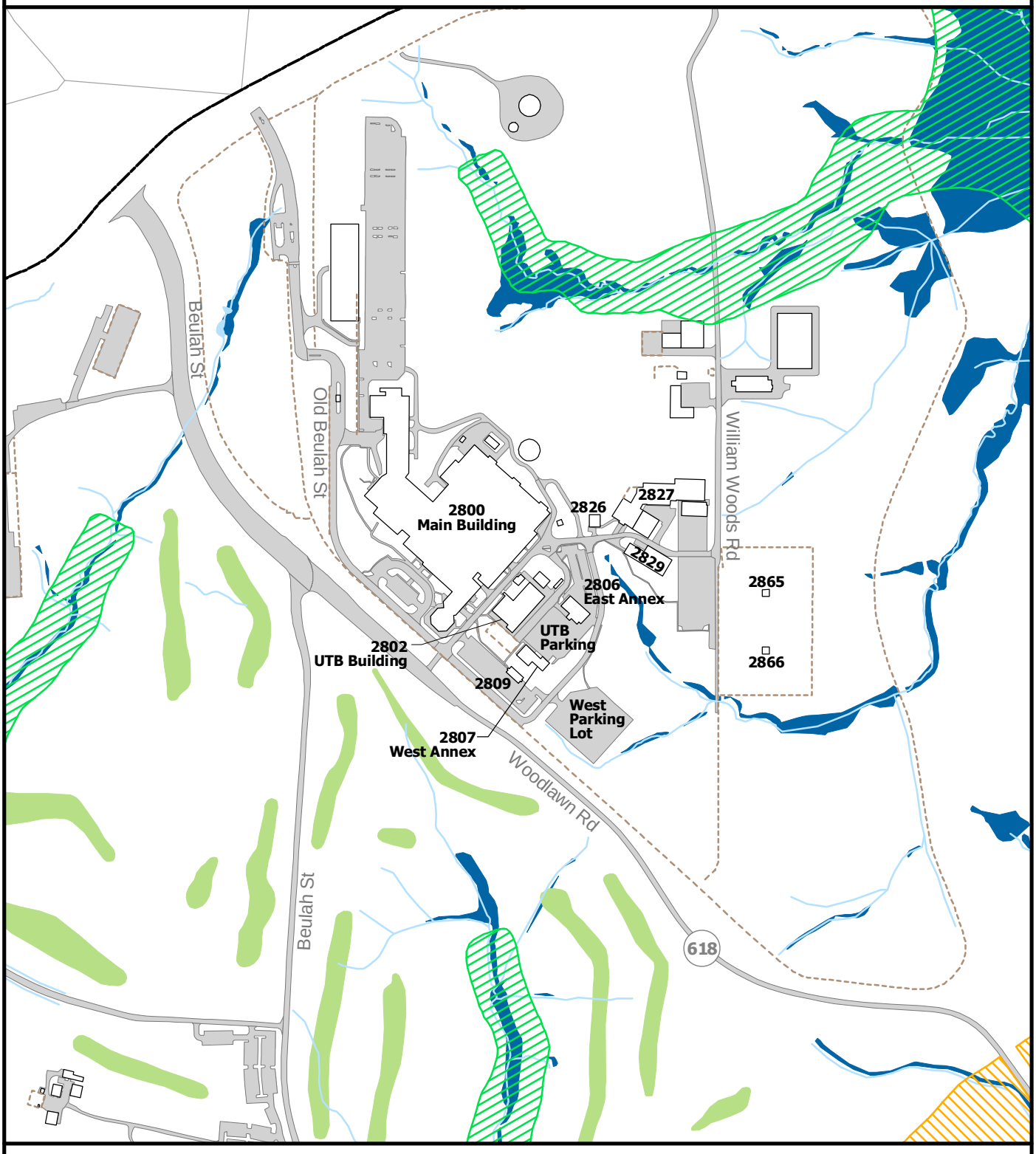

Figure 3-6

any one of 42 species of mammals, 260 species of birds, 32 species of reptiles, and 27 species of amphibians.

The Defense CEETA site is within the Forest and Wildlife Corridor established in 1991. However, because the property is surrounded by a fence, larger species (other than birds) cannot benefit from the Corridor. The fence also limits the number of animal species potentially to be found in the undeveloped areas of the Defense CEETA site. The Technical Load Generator Plant EA (US Army Garrison Fort Belvoir, December 1991) provides a comprehensive list of these species.

The proposed T Block site is already developed, and only those animals that can tolerate a high degree of human presence and disturbance are likely to be found there. Such species include:

- Northern short-tailed shrew (*Blarina brevicauda*)
- Chipmunk (Tamias striatus)
- Eastern grey squirrel (*Sciurus carolinensis*)
- Eastern cottontail rabbit (*Sylvilagus floridana*)
- Woodchuck (Marmota monax)
- A variety of common reptiles
- American crow (Corvus brachrhynchos)
- American robin (Turdus migratorius)
- European starling (*Sturnus vulgaris*)
- House sparrow (Passer domesticus)
- Blue jay (Cyanocitta cristata)
- Whitetail deer (*Odocoileus virginianus*), although use by whitetail deer may be limited by the security fence surrounding the site.

3.9.9 Threatened and Endangered Species

The Endangered Species Act (ESA) of 1973 and subsequent amendments provide for the conservation of threatened and endangered species of animals and plants and the habitats in which they are found. The Department of the Army ensures that consultations are conducted as required under Section 7 of the ESA for any action that “may affect” a federally listed threatened or endangered species according to guidance in Army Regulation (AR) 200-3. The Army also complies to the extent practicable with state threatened and endangered species lists.

In 1994 and 1995, the Virginia Department of Conservation and Recreation, Division of Natural Heritage (VDCR/DNH) (Hobson, 1996) conducted a field survey for endangered, threatened, and state rare species at Fort Belvoir. One species listed as both federally and state-threatened and one state-listed threatened species were identified. The first of these, the bald eagle (*Haliaeetus leucocephalus*), has since been proposed for de-listing by the federal government,

but is still considered threatened within the Commonwealth of Virginia. The shorelines of major creeks, rivers, and lacustrine areas on Fort Belvoir provide valuable nesting, foraging, and loafing habitat for resident and migratory bald eagles.

The other state-listed threatened species found at Fort Belvoir is the wood turtle (*Clemmys insculpta*). The wood turtle inhabits forested floodplains and nearby fields, wet meadows, and farmlands. Because this species over-winters on the bottoms of creeks and streams, a primary habitat requirement is the presence of water (Terwilliger and Tate, 1995). There is an established population of these turtles at Huntley Meadows Park, northeast of the Jackson Miles Abbott Wildlife Refuge. There have been three wood-turtle sightings within Fort Belvoir in the last two years, indicating that this species has likely become established on the installation:

- Along the shoreline of Dogue Creek in 1998 near the Jackson Miles Abbott Wildlife Refuge.
- Along the shoreline of Accotink Creek near US Route 1 in 1998.
- About 75 ft (30 m) north of the Accotink Bay Wildlife Refuge, at the Poe Road bridge in 1999.

Fort Belvoir coordinated the proposed project with the US Fish and Wildlife Service (USFWS) and VDCR/DNH by letters and received the following responses:

The USFWS, by letter dated June 5, 2002, indicated the potential presence of appropriate habitat for the Small Whorled Pogonia (*Isotria medeoloides*). Appropriate habitat consists of almost level to gently sloping terrain in third-growth upland forests with an open understory. It is more often found on slopes facing north or east.

The VDCR/DNH, by letter dated June 7, indicated the presence of natural heritage resources in the area. However, due to the scope of the project, the VDCR/DNH does not anticipate that the project would adversely affect these resources. Letters are in Appendix D.

3.10 Hazardous Substances

The management of hazardous waste at Fort Belvoir is conducted in compliance with the Resource Conservation and Recovery Act (RCRA). Fort Belvoir has both a Hazardous Waste Management Plan and a Hazardous Waste Minimization Plan.

Fort Belvoir has two RCRA Part B permits from the Virginia Department Environmental Quality (VDEQ) for storage of hazardous wastes. All current and former hazardous waste permitted facilities present potential constraints to future development, in that closure of such sites is required prior to reuse. Such closures are subject to regulatory approvals.

Fort Belvoir has about 142 underground storage tanks (USTs), of which 27 are regulated. These tanks contain substances such as heating oil, diesel fuel, motor gasoline, JP-8, lubricants, used oils, and hazardous waste (fuel-contaminated water). Fort Belvoir has completed a program of tightness testing, removal, replacement, and upgrading for the regulated tanks. All replacements are with double-walled, state-of-the-art USTs.

A preliminary assessment/site inspection conducted in 1982 for the Installation Restoration Program (IRP) indicated that there were no sites on Fort Belvoir eligible for an IRP under the Superfund Amendments and Reauthorization Act (SARA) of 1986. There are no Comprehensive Response, Compensation, and Liability Act (CERCLA) sites on Fort Belvoir (US Army Garrison Fort Belvoir, December 2000).

The Fort Belvoir RCRA Solid Waste Management Study (US Army Garrison Fort Belvoir, 1992) identified 238 solid waste management units (SWMUs) on the installation. The closest SWMU to the proposed T Block site is the Stump Dump to the west, a portion of which was removed several years ago when Beulah Street was realigned in 1998.

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